

05/05/14 Agenda:

- Review Homework
 - Worksheet 6 - Surface Area of Cones
- Section 12.5 - Volume of Pyramids & Cones
- Update Formula Sheet
- Homework
 - Worksheet 7 - Volume of Pyramids & Cones

SURFACE AREA AND VOLUME FORMULAS

Name: Answer Key

KEY:

L.A. = Lateral Area

S.A. = Surface Area

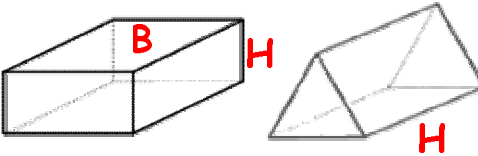
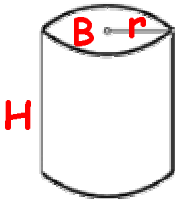
V = Volume

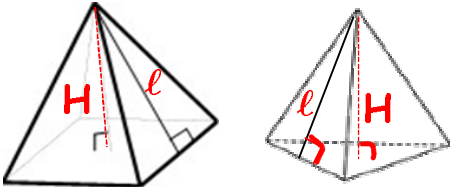
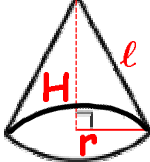
P = perimeter of base

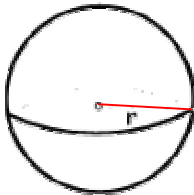
B = area of base

H = height of figure

ℓ = slant height of figure

Straight-Sided Figures (Repeating Base) 2 Bases	PRISMS	CYLINDERS
$L.A. = P \cdot H$ $S.A. = L.A. + 2 \cdot B$ $V = B \cdot H$		 $P = C = 2\pi r$ $B = \pi r^2$

Pointed Figures (Shrinking Base) 1 Base	PYRAMIDS	CONES
$L.A. = \frac{P \cdot \ell}{2}$ $S.A. = L.A. + B$ $V = \frac{B \cdot H}{3}$		 $P = C = 2\pi r$ $B = \pi r^2$

Spheres No Bases	SPHERES
$S.A. =$ $V =$	

Unit 11 Day 7 - Volume of Pyramids & Cones

Targets 11C & 11D

May 5, 2014

There is a simple relationship between volumes of prisms/pyramids and cylinders/cones.

What do we notice about:

- the area of the base of the cube and the pyramid? **SAME**
- the height of the cube and the pyramid? **SAME**

What is the volume of the cube? $V = B \cdot H$

Is the volume of the cube greater or less than the volume of the pyramid? How much more/less?

3 TIMES MORE

Write a formula for the volume of a pyramid.

$$V_{\text{PYRAMID}} = \frac{1}{3} B \cdot H$$

What do we notice about:

- the area of the base of the cylinder and the cone? **SAME**
- the height of the cylinder and the cone? **SAME**

What is the volume of the cylinder?

$$V_{\text{CYL}} = B \cdot H = \pi r^2 \cdot H$$

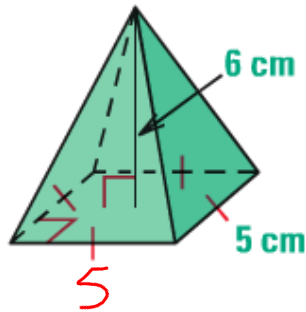
Is the volume of the cylinder greater or less than the volume of the cone? How much more/less?

3

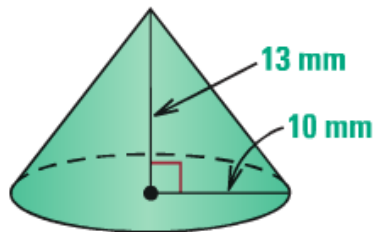
Write a formula for the volume of a cone.

$$V_{\text{CONE}} = \frac{1}{3} B \cdot H$$
$$\frac{1}{3} \pi r^2 \cdot H$$

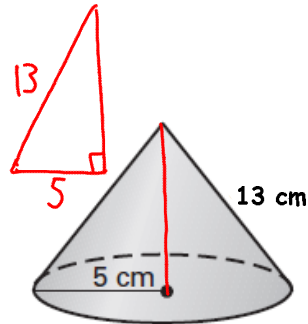
Find the volume of the following figures:

(if applicable, leave the answers in terms of π)

$$\begin{aligned}
 V_{\text{PYR}} &= \frac{1}{3} B \cdot H \\
 &= \frac{1}{3} \cdot 5 \cdot 5 \cdot 6 \\
 &= \frac{150}{3} = 50 \text{ cm}^3
 \end{aligned}$$



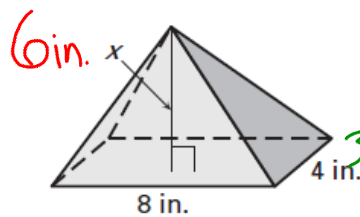
$$\begin{aligned}
 V_{\text{CONE}} &= \frac{1}{3} B \cdot H \\
 &= \frac{1}{3} \pi r^2 \cdot H \\
 &= \frac{1}{3} \pi 10^2 \cdot 13 \\
 &= \frac{1300\pi}{3} \\
 &= 433.3\pi \text{ mm}^3
 \end{aligned}$$



$$\begin{aligned}
 V &= \frac{1}{3} B \cdot H \\
 &= \frac{1}{3} \pi r^2 H \\
 &= \frac{1}{3} \pi 5^2 \cdot 12
 \end{aligned}$$

Find the value of x .

$$V = 64 \text{ in.}^3$$



$$\begin{aligned}
 V_{\text{PYR}} &= \frac{1}{3} B \cdot H \\
 64 &= \frac{1}{3} (8 \cdot 4) \cdot H \\
 3(64) &= \left(\frac{1}{3} (32) \cdot H \right) 3
 \end{aligned}$$

$$\frac{192}{32} = \frac{32H}{32}$$

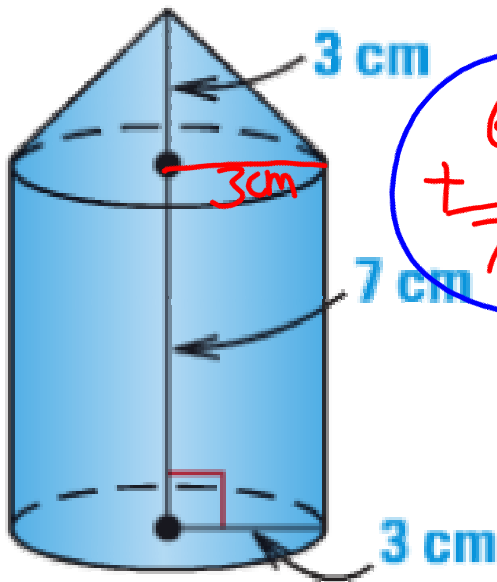
$$6 = H$$

Unit 11 Day 7 - Volume of Pyramids & Cones

Targets 11C & 11D

May 5, 2014

Find the volume of the solid. The cylinder and cone are right.
Leave answers in terms of π .



$$\begin{array}{r} 63\pi \\ + 9\pi \\ \hline 72\pi \text{ cm}^3 \end{array}$$

$$\begin{aligned} V_{\text{cone}} &= \frac{1}{3}\pi r^2 H \\ &= \frac{1}{3}\pi 3^2 \cdot 3 \\ &= 9\pi \text{ cm}^3 \end{aligned}$$

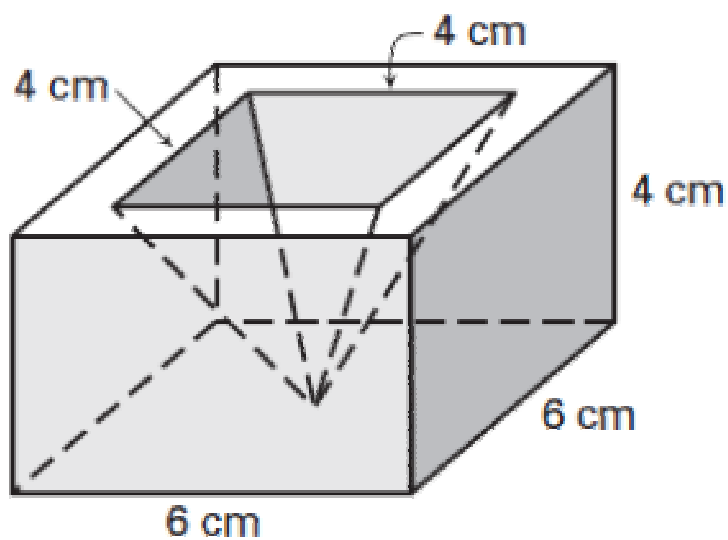
$$\begin{aligned} V_{\text{cyl}} &= \pi r^2 H \\ &= \pi 3^2 \cdot 7 \\ &= 63\pi \text{ cm}^3 \end{aligned}$$

Unit 11 Day 7 - Volume of Pyramids & Cones

Targets 11C & 11D

May 5, 2014

Find the volume of the solid. The prisms, pyramids, and cones are right.
Round your answer to two decimal places.



$$V_{\text{PRISM}} - V_{\text{PYRAMID}}$$